

Analog Zero IF FM Decoder and Embodiments Thereof, Such as the Family Radio Service

Abstract

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A method and system for directly down-converting FM signals to demodulated baseband information signals that can be used to directly down-convert analog FM signals and digital FM signals to demodulated baseband information signals. In an embodiment, the method includes aliasing an FM signal at an aliasing rate substantially equal to the frequency of the FM signal or substantially equal to a sub-harmonic thereof; adjusting the aliasing rate in accordance with frequency changes on the FM signal to maintain the aliasing rate substantially equal to the frequency of the FM signal; and outputting a demodulated baseband information signal. The method optionally includes compensating for phase delays and/or other characteristics of the loop in order to maintain bandwidth and stability for the loop. In an embodiment, the invention is implemented as a zero IF FM decoder that down-converts an FM signal as an I and Q pair, sums the I and Q pair, and generates a correction signal from the sum. The correction signal is used to adjust the aliasing rate to continually alias the FM signal at a sub-harmonic of the FM signal - even as the FM signal changes frequency. In an embodiment, the invention is implemented as an ultra-low power down-converter. In an embodiment, the invention is implemented as a transceiver, which can be an FRS transceiver. Advantages of the invention include, but are not limited to, power reduction, parts reduction, price reduction, size reduction, performance increase, efficiency, and integration possibilities.

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